

F I N A L

PROPOSED PLAN FOR THE FORMER MANEUVER AREA A (FTBLS-002-R-05)

FORMER MANEUVER AREA A FORT BLISS EL PASO, TEXAS

Prepared for:

United States Army Corps of Engineers – Tulsa District
1645 S 101st East Avenue
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Final

**Proposed Plan for the
Former Maneuver Area A (FTBLS-002-R-05)**

**Fort Bliss
El Paso, Texas**

November 3, 2016

**Contract No. W912BV-11-D-0016
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Prepared for:



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The public is invited to comment on a Proposed Plan for the Former Maneuver Area A (FTBLS-002-R-05) Munitions Response Site at Fort Bliss, El Paso, Texas.

PUBLIC COMMENT PERIOD

November 7, 2016 to December 6, 2016

PUBLIC MEETING

Date: November 16, 2016

Time: 6:30 p.m. to 8:30 p.m.

Montana Vista Elementary School
3550 Mark Jason Drive
El Paso, TX 79938

Comments on the Proposed Plan will be accepted during the public comment period. Comments or questions concerning this Proposed Plan, or the Preferred Alternative, should be addressed to:

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For more information, please visit the Information Repositories, which contain project documentation such as work plans and reports:

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ACRONYMS

ARAR applicable and relevant and appropriate requirement
 Army Department of the Army

bgs	below ground surface
BIP	blown-in-place
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DGM	digital geophysical mapping
DoD	Department of Defense
DoDI	Department of Defense Instruction
DPW-ED	Directorate of Public Works – Environmental
EM	Engineering Manual
EOD	explosive ordnance disposal
ESS	Explosives Safety Submission
FS	Feasibility Study
^{GW} Soil _{ing}	Soil to Groundwater Protection
HA	Hazard Assessment
LTM	long-term management
LUC	Land Use Control
MC	munitions constituents
MD	munitions debris
MDAS	material documented as safe
MEC	munitions and explosives of concern
mg/kg	milligrams per kilogram
MMRP	Military Munitions Response Program
MPPEH	material potentially presenting an explosive hazard
MRA	Munitions Response Area
MRS	Munitions Response Site
MRSP	Munitions Response Site Prioritization Protocol
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
O&M	Operations and Maintenance
PCL	protective concentration level
PP	Proposed Plan
RI	Remedial Investigation
ROD	Record of Decision
ROE	right-of-entry
RRD	range-related debris
SI	Site Inspection
SUXOS	Senior UXO Supervisor
TCEQ	Texas Commission of Environmental Quality
^{Tot} Soil _{Comb}	Total Soil Combined
TRRP	Texas Risk Reduction Program
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UXO	unexploded ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer
VSP	visual sample plan

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1 INTRODUCTION

This **Proposed Plan**¹ (PP) identifies the **Preferred Alternative** for addressing **munitions and explosives of concern** (MEC) at the Former Maneuver Area A (FTBLS-002-R-05) Munitions Response Site (MRS) at Fort Bliss, El Paso, Texas. This PP provides the rationale for the selection of the Preferred Alternative and includes summaries of other alternatives evaluated for implementation at this site. This document is issued by the Department of the Army (Army). The Army, after coordinating with the Texas Commission of Environmental Quality (TCEQ) and reviewing and considering all information submitted during the public comment period and the public meetings, will select the final remedy for the site. The Army may modify the Preferred Alternative or select another response action presented in this PP based on new information, public comments, or regulator comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this PP.

The Army is the lead agency for the investigation and cleanup of the Site under the **Comprehensive Environmental Response, Compensation, and Liability Act** (CERCLA). The Army is issuing this PP as part of the public participation responsibilities under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Section 117(a) of CERCLA. This PP summarizes information that can be found in greater detail in the **Remedial Investigation** (RI) (URS 2014) and **Feasibility Study** (FS) (URS 2015) Reports and other documents contained in the **Administrative Record** for this site. The Army and TCEQ encourage the public to review these documents to gain a more comprehensive understanding of the site and investigation activities that have been completed at the site. Stakeholder input (TCEQ and public) to this PP will be documented in a **Record of Decision** (ROD) that documents the selected remedial action.

The Administrative Record is a compilation of the information that was considered in making the proposal presented in this PP, and presents a comprehensive description of the site investigation and proposed remediation activities. The Army will select the final remedy for the site after reviewing and discussing all available data, including information submitted during the 30-day public review period. This review period provides the public with an opportunity to provide comments on the alternatives and remedial action selected for FTBLS-002-R-05. The public is encouraged to review and comment on this PP.

2 SITE BACKGROUND

Fort Bliss is located in portions of Texas and New Mexico, near the city of El Paso, Texas. Of the approximately 1.12 million acres encompassed by the Fort Bliss installation, twelve percent of the installation's total land area is in El Paso County in west Texas, and the remaining 88 percent is in the New Mexico counties of Doña Ana and Otero. FTBLS-002-R-05 is located outside of the Fort Bliss installation boundary (to the east) in El Paso County, Texas. **Figure 1** shows the boundaries of FTBLS-002-R-05, the location of the Fort Bliss, and the surrounding communities.

The Former Maneuver Area MR site was a transferred site comprised of portions of two adjacent former maneuver areas known as the Expansion of Facilities Area (Maneuver Area No. 1) and Maneuver Area (Maneuver area No. 2), encompassing approximately 72,520 acres.

Prior reports indicate that the Former Maneuver Area Munitions Response Area (MRA) was used for various military training exercises from 1939 into the 1970s. The entire acreage was relinquished by the Army in 1980. A subsequent Site Inspection (SI) resulted in the MRA being divided into two MRSs: Former Maneuver Area A (24,477 acres) and Former Maneuver Area B (48,043 acres) (TLI solution, Inc. 2011). Former Maneuver Area B was recommended for no further action (NFA) while further investigation was recommended for Former Maneuver Area A.

An RI (URS 2014) was completed for Former Maneuver Area A. The RI consisted of visual survey observations, geophysical investigations, intrusive investigations, and munitions constituent (MC) sampling. Based on the results of the visual survey observations, twelve geophysical investigation areas were identified within the Former Maneuver Area A. These areas were identified as geophysical investigation areas A through L. MEC and munitions debris (MD) were identified within the geophysical investigation areas during the completion of the RI field work.

The RI recommended that Former Maneuver Area A be subdivided into two MRSs. However, in order to better facilitate any potential future remedial actions the MRS boundaries recommended in the RI were revised during the development of this FS (URS 2015). The Former Maneuver Area A MRS was subdivided into four MRSs (see **Figure 1**) rather than the two MRSs originally recommended in the RI. All four MRSs are named the Former Maneuver Area A and are distinguished by their new MRS identification numbers. Revising the naming and boundaries of the MRSs did not change the conclusions and

¹ Boldfaced terms are defined in Section 12 – Glossary of Terms

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recommendations of the RI.

The MRS identified in the RI report as the Former Maneuver Area A (FTBLS-002-R-01) encompassed approximately 1,120 acres and consisted of eastern and western areas that were not contiguous. The parcels within the MRS are owned by two different landowners. In order to simplify any potential future land use agreements and to allow for the selection of a different remedy for each property owner (if warranted or needed with input from the current landowners), this MRS will be divided into three MRSs designated as follows.

- The portion of the western area (520 acres) that is currently owned by a private individual is designated as Former Maneuver Area A (FTBLS-002-R-03).
- The portion of the western area (397 acres) that is currently owned by the Texas General Land Office is designated as Former Maneuver Area A (FTBLS-002-R-04).
- The eastern area (203 acres) that is currently owned by the Texas General Land Office is designated as Former Maneuver Area A (FTBLS-002-R-05).

This PP addresses FTBLS-001-R-05.

3 SITE CHARACTERISTICS

FTBLS-002-R-05 includes undeveloped land, primarily used for ranching and/or recreational hunting, and encompasses approximately 203 acres (**Figure 1**). None of the land associated with FTBLS-002-R-05 is currently owned or utilized by Fort Bliss. The MRS is currently owned by a State of Texas entity (the Texas General Land Office). This MRS is part of the larger Former Maneuver Area MRA, which was used for various military training exercises from 1939 into the 1970s (URS 2015).

Information regarding threatened and endangered species with potential to occur in FTBLS-002-R-05 was obtained from the United States Fish and Wildlife Service and Texas Parks and Wildlife Department as part of the RI. This information identified threatened/endangered species that are reported to exist or potentially exist in El Paso County and require vegetative habitats that exist at the site. However, no endangered wildlife species were identified at FTBLS-002-R-05 during the completion of the RI fieldwork.

With the exception of the removal of MEC and MD items completed as part of the RI, no remedial actions have been completed at this MRS.

4 SCOPE AND ROLE OF THE RESPONSE ACTION

It is anticipated that the remedy selected following this PP will be the final action for FTBLS-002-R-05. The overall strategy of the Army is to decrease or eliminate the potential for munitions-related accidents resulting from human interaction with MEC. The preferred alternative is technically and administratively feasible and provides the best balance of cost and reduction of risk to human health. **Five-year reviews**, if required, will ensure the remedy remains protective.

5 SUMMARY OF SITE RISKS

During RI field activities, two MEC items were identified at FTBLS-002-R-05. Based on the RI data, a potentially complete MEC exposure pathway exists for current and/or future receptors at FTBLS-002-R-05 including site workers, construction workers, hunters, ranchers, trespassers, and on-site residents (URS 2015).

Following the completion of the intrusive investigations, MC sampling was completed for soils located in representative 100 percent coverage grids and all blown-in-place (BIP) locations. Analytical results for explosives were compared to the Texas Risk Reduction Program (TRRP) Total Soil Combined Exposures ($^{Tot}Soil_{Comb}$) and Soil to Groundwater Protection ($^{GW}Soil_{Ing}$).

In accordance with TCEQ TRRP guidance for metals, the protective concentration level (PCL) was selected using the lower of the $^{Tot}Soil_{Comb}$ and $^{GW}Soil_{Ing}$. This PCL was then compared to the Texas Statewide Background level. The background level was utilized as the PCL if it was higher than the $^{Tot}Soil_{Comb}$ and $^{GW}Soil_{Ing}$.

MC sampling was performed for surface soils located in 4 grid sampling units deemed representative of the MRS. Grid sampling utilized an incremental sampling method. The incremental sampling was utilized for human health and ecological risk evaluations because it was considered to be more representative of the constituent concentrations across the entire MRS (URS 2015).

Human Health Risk Assessment

With the exception of lead, all sample results were below the human health screening levels. Lead concentrations were identified in excess of the human health screening level (1.5 milligrams per kilogram [mg/kg] $^{GW}Soil_{Ing}$) in all six MC samples. However, the concentrations were below the state-wide background concentrations established by the TCEQ for lead (15 mg/kg). Based on the results of the MC

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sampling, No Further Action (NFA) was recommended for MC at this MRS.

Ecological Risk Assessment

With the exception of lead, all sample results were below the ecological screening levels. Lead concentrations were identified in excess of the ecological screening level (11 mg/kg) in three of the four MC samples. However, the concentrations were below the state-wide background concentrations established by the TCEQ for lead (15 mg/kg). Based on the results of the MC sampling, NFA was recommended for MC at this MRS.

MEC Hazard Assessment

A MEC Hazard Assessment (HA) was completed using the United States Environmental Protection Agency (USEPA) method (USEPA 2008), which takes into account the severity, accessibility, and sensitivity of potential explosives hazards. FTBLS-002-R-05 has a baseline MEC HA score of 895 (out of 1,000), which results in a Hazard Level of 1 (the highest hazard level). The primary factors leading to this score are the types of MEC identified (4.2-inch mortars), the accessibility of the site, the former use of the site (maneuver areas), and the possibility of MEC including **unexploded ordnance** (UXO) items at the surface (URS 2014).

Data used to complete the USEPA MEC HA were also used to complete Munitions Response Site Prioritization Protocol (MRSP) tables. In 2005, the Department of Defense (DoD) published the MRSP as a Federal Rule (32 Code of Federal Regulations [CFR] Part 179) to assign a relative risk priority to each defense site in the Military Munitions Response Program (MMRP) Inventory for response activities. Risk is based on the overall conditions at each MRS taking into consideration various factors related to explosive safety (i.e., MEC hazards) and environmental hazards (i.e., MC contamination). In accordance with the DoD MRSP Primer (DoD 2007), each MRS is assigned an MRSP Priority ranging from 1 to 8. Priority 1 indicates the highest potential hazard and Priority 8 indicates the lowest potential hazard. The overall MRSP priority score for FTBLS-002-R-05 is 2 (URS 2014).

6 REMEDIAL ACTION OBJECTIVE

The Remedial Action Objective for FTBLS-002-R-05 is:

- Reduce the potential for direct contact with MEC by human receptors considering the current land uses and potential future land uses. Current receptors were identified as ranchers and recreational users (hunters). Future receptors were identified as site workers, construction workers,

hunters, ranchers, trespassers, residents, and/or ecological receptors. Ranching and recreation were identified as current land uses. Future uses are anticipated to be consistent with the current land uses.

The MEC hazard can be mitigated by reducing the potential for direct contact through removal of MEC items and/or Land Use Controls (LUCs).

7 SUMMARY OF REMEDIAL ALTERNATIVES

Five alternatives were evaluated in the FS and are presented below. A detailed analysis of nine criteria and a comparative analysis, as required by the NCP, were completed for each alternative. A summary of the detailed analysis of the remedial action alternatives for FTBLS-002-R-05 is shown in **Table 1**.

The Preferred Alternative for FTBLS-002-R-05 is Alternative 5 – MEC Surface Clearance and MEC Subsurface Removal.

7.1 Alternative 1: No Action

Alternative 1 assumes that NFA would be taken regarding potential MEC at FTBLS-002-R-05. No LUCs would be implemented. This alternative provides value for comparing the other alternatives (i.e., no treatment, engineering controls, or institutional controls). This alternative would have no capital or operations and maintenance (O&M) costs. This alternative is required by the NCP for baseline comparison purposes (40 CFR 300.430[e][6]).

Estimated Costs for Alternative 1:

Capital Cost: \$0

Total O&M/Periodic Cost: \$0

Total Cost of Alternative: \$0

Total Present Value of Alternative: \$0

7.2 Alternative 2: Public Awareness Program

Alternative 2 includes a public awareness program to promote communication between the public and Fort Bliss, and to inform receptors of the risks associated with potential MEC at FTBLS-002-R-05. This alternative does not allow unrestricted use and unlimited exposure. Five-year reviews (a minimum frequency of once every five years after initiation of the selected remedial action) would be required to evaluate the continued effectiveness and permanence of this alternative.

The public awareness program would be implemented in accordance with the Fort Bliss Community Relations Plan. Public may include federal, regional, state, local, and Native American governmental entities and

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officials; public and private organizations; and individuals. The Fort Bliss MMRP public awareness program may consist of, but would not be limited to, the following:

- Maintaining the administrative record and information repository
- Preparing and issuing press releases
- Preparing and distributing fact sheets
- Updating the Public Affairs Mailing List
- Public meetings

The administrative record file includes documents such as site reports, technical summaries, transcripts, press releases, and fact sheets. The current administrative record file for the MMRP is located on Fort Bliss.

Prepared statements would be released to local newspapers and/or radio and television stations as needed. The news releases would be mailed to the media and placed in the information repository. Fact sheets would be prepared as required. Fact sheets would be mailed to all parties on the Public Affairs Mailing List. In addition, copies of each fact sheet would be placed in the information repository.

Public meetings would be held as required to discuss any additional information pertinent to the public regarding the MRS. Public notices announcing public meetings would be placed in the appropriate local media, and the meetings would be held at locations convenient to the community.

Estimated Costs for Alternative 2:

Capital Cost: \$88,406

Total O&M/Periodic Costs for 30 Years: \$189,750

Total Cost of Alternative: \$278,156

Total Present Value of Alternative: \$231,279

7.3 Alternative 3: Land Use Controls

Alternative 3 (**Figure 2**) includes all of the components of Alternative 2 plus additional LUCs in the form of engineering controls. The engineering controls would limit human exposure to FTBLS-002-R-05 by providing a physical barrier (i.e. fence) and warnings signs. This alternative does not allow unrestricted use and unlimited exposure. Five-year reviews (a minimum frequency of once every five years after initiation of the selected remedial action) would be required to evaluate the continued effectiveness and permanence of this alternative. Annual site inspections would be completed until the first five-year review. Following the first five-year review, the site inspection frequency would be adjusted based on the effectiveness of the remedy.

Engineering controls would consist of fencing and signage around the perimeter of FTBLS-002-R-05 to prevent inadvertent access to the MRS and to inform site receptors of the potential MEC risks. The perimeter of FTBLS-002-R-05 is approximately 12,948 linear feet. Signs would be installed at access roads and every 500 feet around the entire perimeter of this MRS. Fencing and signs would be installed by construction workers aided by UXO personnel providing UXO safety support. This support would consist of a minimum of two qualified DoD explosive ordnance disposal (EOD) or UXO-qualified personnel (i.e., one UXO Technician III and one UXO Technician II). The probability of encountering UXO along the perimeter of the MRS during construction is considered low; therefore, an Explosives Safety Submission (ESS) is not anticipated to be required for the UXO safety support.

Future decisions about land use would drive long-term management (LTM) requirements. LTM includes activities such as O&M of engineering controls and assessment of future actions required to address any changes to land use. For example, if land use changes from undeveloped to residential or some other unanticipated use, LTM decisions would need to be made with respect to the appropriate response action required (e.g., clearance and removal activities and/or construction support).

None of the property located within the FTBLS-002-R-05 is owned or used by Fort Bliss. Since the property is not owned by Fort Bliss, implementation of this remedy will require the approval and participation of the landowner.

Estimated Costs for Alternative 3:

Capital Cost: \$490,273

Total O&M/Periodic Costs for 30 Years: \$548,226

Total Cost of Alternative: \$1,038,500

Total Present Value of Alternative: \$929,491

7.4 Alternative 4: MEC Surface Clearance

Alternative 4 includes a MEC surface clearance for FTBLS-002-R-05 (203 acres) (**Figure 3**). MEC surface clearances involve removal and disposal of MEC, material potentially presenting an explosive hazard (MPPEH), and MD identified on the ground surface. A MEC surface clearance for the MRS would reduce the risk of site receptors encountering surface MEC, but would not address subsurface MEC or the potential for subsurface MEC to be exposed on the surface through erosion. According to Unified Facilities Criteria 3-301-01 (DoD 2013), the depth of the frost line for Fort Bliss is 0 inches; therefore, the potential for frost heave migration is considered an insignificant pathway. With

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the potential for subsurface MEC, the public awareness program described in Alternative 2 and the LUCs described in Alternative 3 are included in conjunction with the MEC surface clearance activities for FTBLS-002-R-05.

The MEC surface clearances would be completed by qualified personnel (e.g., DoD EOD or UXO-qualified personnel) using hand-held detectors (e.g., Schonstedt GA-52Cx magnetometer, a White's Spectrum XLT all-metals detector). A typical surface clearance process involves vegetation removal, partitioning the MRS into grids, followed by a systematic surface sweep of the grids to remove MEC and possibly other metallic debris. Completing a MEC surface clearance typically requires a Senior UXO Supervisor (SUXOS) responsible for planning and directing MEC operations; a UXO Safety Officer (UXOSO) to ensure that work is performed safely; a UXO Quality Control Specialist (UXOQCS) to ensure the work is performed in accordance with rules, regulations, and planning documents; and UXO technicians.

MPPEH items would be subjected to an inspection process in accordance with an approved ESS, United States Army Corps of Engineers (USACE) Engineering Manual (EM) 385-1-97, and Department of Defense Instruction (DoDI) 4140.62 (DoD 2014). MPPEH would be inspected by a UXO Technician III and Technician II to determine the explosive hazard and appropriate disposal method. MEC that is unacceptable to move would be BIP and MEC that is determined acceptable to move would be consolidated by qualified UXO personnel for later disposal in a consolidated shot. MPPEH certified as material documented as safe (MDAS) would be reclassified and segregated into MD, range-related debris (RRD), or other debris and disposed of at a local landfill or recycler, as appropriate.

Based on the limited number of MEC items identified at the MRS, the field time to complete this alternative was calculated using the time anticipated to complete a surface clearance of the MRS based on its total acreage. UXO teams will complete systematic sweeps with magnetometers over the surveyed grids.

FTBLS-002-R-05 encompasses 203 acres. Completion of a surface clearance for the MRS is anticipated to require approximately 4 days (1 week) to complete. This length of time is based on the assumption that two 20-man UXO teams would complete the MEC surface clearance for 203 acres at a rate of 50 acres per day, working four 10-hour days per week.

None of the property located within the FTBLS-002-R-05 is owned or used by Fort Bliss. Since the property is not owned by Fort Bliss, implementation of this remedy

will require the approval and participation of the landowner.

Estimated Costs for Alternative 4:

Capital Cost: \$963,017

Total O&M/Periodic Costs for 30 Years: \$548,226

Total Cost of Alternative: \$1,511,244

Total Present Value of Alternative: \$1,402,235

7.5 Alternative 5: MEC Surface Clearance and MEC Subsurface Removal

Alternative 5 includes the MEC surface clearance described in Alternative 4 and includes MEC subsurface removal action for FTBLS-002-R-05 (203 acres) (**Figure 4**). The MEC surface clearance and MEC subsurface removal involves removal and disposal of MEC, MPPEH, and MD. For this alternative, it is assumed that the subsurface removal actions would generally be completed to depths of less than 4 feet below ground surface (bgs). MEC surface clearance and MEC subsurface removal would significantly reduce the risk of encountering MEC at the MRS.

Following the completion of the MEC surface clearance, a MEC subsurface removal action would be completed. The MEC subsurface removal actions would include a comprehensive analog survey to mag and flag subsurface anomalies, which would then be removed by hand removal methods.

A MEC subsurface removal action would be completed by qualified personnel (e.g., DoD EOD or UXO-qualified personnel) using hand-held detectors (e.g., Schonstedt GA-52Cx magnetometer, a White's Spectrum XLT all-metals detector), shovels, and/or earth moving machinery. A typical MEC subsurface removal action involves acquiring targets, removing targets, and resolving target locations. Completing a MEC subsurface removal action typically requires a SUXOS responsible for planning and directing MEC operations; a UXOSO to ensure that work is performed safely; a UXOQCS to ensure the work is performed in accordance with rules, regulations, and planning documents; and UXO technicians.

MPPEH items would be subjected to an inspection process in accordance with an approved ESS, USACE EM 385-1-97, and DoDI 4140.62 (DoD 2014). MPPEH would be inspected by a UXO Technician III and Technician II to determine the explosive hazard and appropriate disposal method. MEC that is unacceptable to move would be BIP and MEC that is determined acceptable to move would be consolidated by qualified UXO personnel for later disposal in a consolidated shot. MPPEH certified as MDAS would

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be reclassified and segregated into MD, RRD, or other debris and disposed of at a local landfill or recycler, as appropriate.

The estimated quantity of potential anomalies for FTBLS-002-R-05 was calculated using data obtained from the RI's DGM and intrusive investigation results. The geophysical investigation for this MRS covered 48,322 linear feet and 4 grids with nominal dimensions of 100 feet by 100 feet. Assuming a 2.5-foot coverage width for DGM transect surveys, the approximate area covered for this MRS was 120,805 square feet or 2.77 acres. A total of 129 target anomalies were identified by DGM. The average density for the investigated areas was 47 target anomalies per acre. Since the RI grid selection was biased towards areas with greater anomaly densities, this number may represent a higher than normal density than the remainder of the MRS. Further analysis of FTBLS-002-R-05 was completed using visual sampling plan Geostatistical Density Mapping. VSP indicated anomaly densities ranging from low to high throughout the MRS (i.e., 0 to 75 anomalies per acre). Based on VSP, the average anomaly density for this MRS was estimated at 10 anomalies per acre.

This alternative is estimated to take less than one field season to complete. The length of time for the MEC surface clearance is based on the assumptions that two 20-man UXO teams would complete the MEC surface clearance of 203 acres at a rate of 50 acres per day, working four days per week. The length of time for the MEC subsurface removal action is based on the assumptions that five 7-man UXO teams would investigate and resolve an estimated 2,030 anomalies over 203 acres at a rate of 30 acres per day, working four 10-hour days per week.

None of the property located within the FTBLS-002-R-05 is owned or used by Fort Bliss. Since the property is not owned by Fort Bliss, implementation of this remedy will require the approval and participation of the landowner.

Estimated Costs for Alternative 5:

Capital Cost: \$1,090,750

Total O&M/Periodic Costs: \$0

Total Cost of Alternative: \$1,090,750

Total Present Value of Alternative: \$1,090,750

8 EVALUATION OF ALTERNATIVES

Nine evaluation criteria are statutory criteria required by the NCP (40 CFR 300) and described in the *Guidance for Conducting Remedial Investigations and Feasibility Studies under the Comprehensive Environmental Response, Compensation, and Liability*

Act (USEPA 1988). The nine criteria were used to evaluate the different alternatives individually and against each other in order to select a remedy. These nine criteria are segregated into three groups and are briefly described below.

Threshold criteria are requirements that each alternative must meet in order to be selected. There are two threshold criteria, as listed below:

- *Overall Protection of Human Health and the Environment* determines whether an alternative eliminates, reduces, or controls threats to public health and the environment.
- *Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)* evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

Primary balancing criteria are used to weigh major trade-offs among alternatives. There are five balancing criteria, as listed below:

- *Short-Term Effectiveness* considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
- *Long-Term Effectiveness and Permanence* considers the ability of an alternative to maintain protection of human health and the environment over time.
- *Reduction of Toxicity, Mobility, and Volume through Treatment* evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
- *Implementability* considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
- *Cost* includes estimated capital and annual operations and maintenance costs. Cost estimates are expected to be accurate within a range of +50% to -30%.

Modifying criteria may be considered to the extent that information is available during the FS, but can be fully considered only after public comment is received on the PP. In the final balancing of trade-offs among alternatives upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria. There are two modifying criteria, as listed below:

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- *State Acceptance* considers whether the state agrees with the Army analyses and recommendations, as described in the FS and this PP.
- *Community Acceptance* considers whether the local community agrees with the Army analyses and Preferred Alternative. Comments received on the PP are an important indicator of community acceptance.

The five alternatives requiring detailed analysis were evaluated against the nine criteria identified above. The detailed analysis summary can be found in **Table 1**. In addition, an analysis was conducted to compare the alternatives against each other in order to determine the Preferred Alternative. The comparison of the alternatives to the nine evaluation criteria is discussed below.

8.1 Overall Protection of Human Health and the Environment

Alternative 1 is the least protective of the alternatives. Alternatives 2 and 3 provide a low level of protection for human health through LUCs (i.e., public awareness program and/or engineering controls). Alternatives 1, 2, and 3 do not provide any reduction in explosive hazards and MEC, if any, would not be eliminated or reduced. Risks to current and future receptors would remain indefinitely. Alternatives 4 and 5 provide greater levels of protection than Alternatives 1, 2, and 3 by eliminating or reducing the amount of MEC, if any, through MEC removal actions. Alternative 5 is considered the most protective of human health due to the removal of MEC from the surface and subsurface. MEC is not expected to have a significant negative impact on the ecosystem.

8.2 Compliance with ARARs

Planning would be required for Alternatives 3, 4, and 5 to comply with chemical-specific, location-specific, and action-specific ARARs. For Alternative 3, compliance with ARARs would be limited to activities related to the installation of fencing and warning signs. Compliance with ARARs for Alternatives 4 and 5 would require planning due to regulations governing the transportation, storage, treatment, and disposal of MEC items during surface and/or surface clearances as well as the potential impact to endangered species due to the disruptive nature of surface clearance activities in the endangered species habitat.

8.3 Long-Term Effectiveness and Permanence

Alternative 1 does not provide long-term effectiveness and permanence for the MRS because potential

exposure pathways between site receptors and MEC would remain. Alternatives 2 and 3 provide some long-term effectiveness and permanence through implementation of LUCs (i.e., public awareness program and/or engineering controls). The overall effectiveness of the LUCs would depend on the support, involvement, and willingness of site receptors (e.g., local agencies, landowners). Alternatives 4 and 5 provide greater long-term effectiveness and permanence because these alternatives include removal of MEC and reduction of potential exposures. Alternative 4 only includes surface MEC removal, which is less effective in the long-term when compared to the removal of surface and subsurface MEC in Alternative 5. With regards to residual risk, there would remain a risk of potential MEC hazards for all five alternatives. The greatest reduction in risk would be achieved with Alternative 5, which provides the greatest long-term effectiveness and permanence.

8.4 Reduction of TMV through Treatment

Toxicity and mobility factors are not specifically applicable to MEC. Alternatives 1, 2, and 3 do not provide any reduction in the volume of MEC. Alternative 4 includes reduction in the volume of surface MEC and Alternative 5 includes a reduction in the volume of surface and subsurface MEC. Reduction in MEC for Alternatives 4 and 5 would be accomplished through MEC disposal operations (i.e., BIP or consolidated shot).

8.5 Short-Term Effectiveness

Alternatives 1 and 2 have no short-term impacts to the community, workers, or the environment. Alternatives 3, 4, and 5 have minimal impacts to the community. Alternative 3 has relatively higher potential risks than Alternatives 1 and 2 due to fence and sign installation around the perimeter of FTBLS-002-R-05. Workers who install the fencing and signs would potentially be exposed to surface and/or subsurface MEC, but UXO safety support procedures would be utilized to lower the risk of MEC interaction. Alternatives 4 and 5 pose the highest potential risks to site workers from the handling of MEC, if any, during MEC surface clearance and MEC subsurface removal actions. Appropriately trained personnel, safety procedures, protective equipment, and approved planning documents (e.g., ESS) would be used to reduce impacts to the workers, environment, and community. The duration of worker exposure to potential safety hazards would be dependent on available resources to complete the fieldwork.

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8.6 Implementability

Alternative 1 has no action to implement. Alternatives 2, 3, 4, and 5 are technically feasible and the services and materials necessary to implement the alternatives are available.

Alternative 2 has no construction activities to implement and right-of-entry (ROE) agreements would not be required. Administratively, a process substantially similar to this alternative was implemented at Fort Bliss (i.e., Community Involvement Plan) during the RI; therefore, this alternative is considered administratively feasible.

Alternatives 3, 4, and 5 would be difficult to implement administratively. According to the RI, FTBLS-002-R-05 is currently owned by a State of Texas entity (the Texas General Land Office). None of the land associated with the MRS is currently owned or used by Fort Bliss. Therefore, a ROE agreement, or similar instrument, would be required by the Army to allow access to these properties. With the exception of Alternative 1, in comparison to the other alternatives, Alternative 2 is the easiest to implement.

8.7 Cost

The total estimated costs for implementing the alternatives at the MRS are as follows:

- Alternative 1 (No Action) (\$0) – No associated capital, O&M, or periodic costs.
- Alternative 2 (Public Awareness Program) (\$278,156) – Capital costs include labor and materials for implementation of a public awareness program. Periodic costs for five-year reviews include continued public awareness and participation, and administrative record review.
- Alternative 3 (Land Use Controls) (\$1,038,500) – Capital costs include labor and materials for the installation of fencing and signs and implementation of a public awareness program. Annual O&M costs include annual site inspections until the first five-year review. Periodic costs for five-year reviews include site inspection and maintenance, continued public awareness and participation, and administrative record review.
- Alternative 4 (MEC Surface Clearance) (\$1,511,244) – Capital costs include labor and materials for the implementation of LUCs and the MEC surface clearance. Periodic costs for five-year reviews include site inspection and maintenance, continued public awareness and participation, and administrative record review.
- Alternative 5 (MEC Surface Clearance and MEC Subsurface Removal) (\$1,090,750) – Capital costs

include labor and materials for the MEC surface clearance and MEC subsurface removal. There are no periodic costs associated with this alternative.

8.8 State Acceptance

State acceptance cannot be assessed until comments on the PP are received. Modifying criteria (State and Community Acceptance) are considered in the remedy selection process.

8.9 Community Acceptance

Community acceptance cannot be assessed until comments on the PP are received. Modifying criteria (State and Community Acceptance) are considered in the remedy selection process.

9 PREFERRED ALTERNATIVE

Two MEC items were identified at FTBLS-002-R-05 in the RI. Additionally, concentrated areas of MD were identified at the MRS suggesting the area was historically utilized as a target for 4.2-inch mortars. The number and location of MEC and MD items found within this MRS are indicative of a high density area (i.e., target).

Based on the evaluation of the alternatives with respect to the threshold and balancing criteria and in comparison with each other, the Preferred Alternative for FTBLS-002-R-05 is Alternative 5 – MEC Surface Clearance and MEC Subsurface Removal. The Army believes that Alternative 5 meets the threshold criteria, is technically and administratively feasible, and provides the best balance of cost and reduction of risk to human health among the other alternatives with respect to the balancing and modifying criteria. The Army expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA §121(b): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element, or explain why the preference for treatment will not be met.

The primary components of Alternative 5 (MEC surface clearance and MEC subsurface removal to 4 feet bgs) will permanently eliminate the risks associated with MEC at the MRS.

10 COMMUNITY PARTICIPATION

Information regarding the cleanup at FTBLS-002-R-05 is provided to the public through the issuance of information and documents to property owners, the

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Administrative Record file for the site, and announcements published in the El Diario de El Paso and the El Paso Times newspapers. The public is encouraged to refer to these sources to stay informed on issues pertaining to the restoration activities.

In accordance with the NCP, an Administrative Record file has been established for Fort Bliss. The contents of the file include a variety of written material, such as pieces of correspondence, data reports, assessments, plans, newspaper articles, notices, and fact sheets. The Administrative Record files are located at the Information Repository (e.g., Directorate of Public Works – Environmental [DPW-ED]).

The Army is soliciting input from the community on this PP. The comment period will extend from November 7, 2016 to December 6, 2016. Written comments must be postmarked no later than the last day of the public comment period, December 6, 2016. Comments or questions concerning this PP, or the Preferred Alternative, should be addressed to Mr. Frank Roepke.

During the comment period, one public meeting will be held to present the PP and to answer questions relevant to the PP. Following the public meeting, the comments received on this PP will be summarized and responses provided in the Responsiveness Summary section of the ROD. The ROD will present the final selected remedy for the site.

Public Comment Period
November 7, 2016 to December 6, 2016

Public Meetings
Wednesday November 16, 2016
6:30 p.m. to 8:30 p.m.
Montana Vista Elementary School
3550 Mark Jason Drive
El Paso, Texas 79938

Contact for Comments/Questions?
U.S. Army Corps of Engineers
Tulsa District
Attn: (b) (6)
1645 South 101st East Avenue
Tulsa, Oklahoma 74128
Phone: (b) (6)

Information Repository
Directorate of Public Works –
Environmental (DPW-ED)
Building 622 Taylor Road
Fort Bliss, Texas 79916

(b) (6)

11 REFERENCES

DoD. 2007. Munitions Response Site Prioritization Protocol Draft Primer, Office of the Deputy Under Secretary of Defense Installations and Environment, Office of Environmental Management. April.

DoD. 2013. Unified Facilities Criteria (UFC) Structural Engineering.

DoD. 2014. DoD Instruction (DoDI) 4140.62, Material Potentially Presenting an Explosive Hazard. November.

TLI Solutions, Inc. 2009. MMRP Final Historical Records Review. Fort Bliss, El Paso, Texas. October.

TLI Solutions, Inc. 2011. MMRP Final Site Inspection Report. Fort Bliss, El Paso, Texas. March.

URS. 2014. Final Remedial Investigation Report. Former Maneuver Area A, Fort Bliss, El Paso, Texas.

URS. 2015. Draft Final Feasibility Study. Former Maneuver Area A, Fort Bliss, El Paso, Texas. August.

USEPA. 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies under the Comprehensive Environmental Response, Compensation, and Liability Act.

USEPA. 2008. Interim Munitions and Explosives of Concern Hazard Assessment Methodology Document. EPA 505-B-08-001. October.

12 GLOSSARY OF TERMS

Administrative Record: A compilation of all documents relied upon to select a remedial action pertaining to the investigation and remediation of the project site.

Applicable or relevant and appropriate requirements (ARARs): The Federal and State environmental laws that a selected remedy will meet. These requirements may vary among sites and alternatives.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, otherwise known as Superfund): A federal law that

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addresses problems resulting from releases of hazardous substances to the environment. This law also establishes criteria for the creation of key documents such as the RI, FS, PP, and ROD.

Feasibility Study (FS): A FS evaluates possible remedies using the information generated from the RI. The FS becomes the basis for selection of a remedy that effectively eliminates the threat posed by contaminants at the site.

Five-Year Review: Required when a remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure. A review is conducted within five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

Munitions Constituents (MC): Any materials originating from UXO, discarded military munitions, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

Munitions Debris (MD): Remnants of munitions (e.g., penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization or disposal. MD is confirmed inert and free of explosive hazards by technically-qualified personnel.

Munitions and Explosives of Concern (MEC): This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means: (a) UXO; (b) discarded military munitions; or (c) explosive MC present in high enough concentrations to pose an explosive hazard.

Preferred Alternative: The alternative that, when compared to other potential alternatives, was determined to best meet the CERCLA evaluation criteria and is proposed for implementation at a site.

Proposed Plan (PP): A plan that identifies the preferred remedial alternative for a site, and is made available to the public for comment.

Record of Decision (ROD): The ROD documents the remedial action plan for a site and performs the following functions: it certifies that the remedial selection process was carried out in accordance with CERCLA and NCP; it describes the technical parameters of the remedy; and it provides the public with a consolidated summary of information about the site, the selected remedy, and the rationale for the selection.

Remedial Investigation (RI): An exploratory inspection conducted at a site to define the nature and extent of contamination present.

Unexploded Ordnance (UXO): Military munitions that: (a) have been primed, fuzed, armed, or otherwise prepared for action; (b) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (c) remain unexploded either by malfunction, design, or any other cause.

FORMER MANEUVER AREA A (FTBLS-002-R-05) MUNITIONS RESPONSE SITE

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for FTBLS-002-R-05 at Fort Bliss is important to the Army and the Texas Commission of Environmental Quality. Comments provided by the public are valuable in helping select a final cleanup remedy for the site.

You may use the space below to write your comments, then fold and mail to:

U.S. Army Corps of Engineers – Tulsa District
Attn: Frank Roepke
1645 South 101st East Avenue
Tulsa, Oklahoma 74128

Comments must be postmarked by December 6, 2016. If you have any questions about the comment period or the Proposed Plan, please contact (b) (6). Those with electronic communication capabilities may submit their comments to the Army via Internet at the following e-mail address: (b) (6)

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

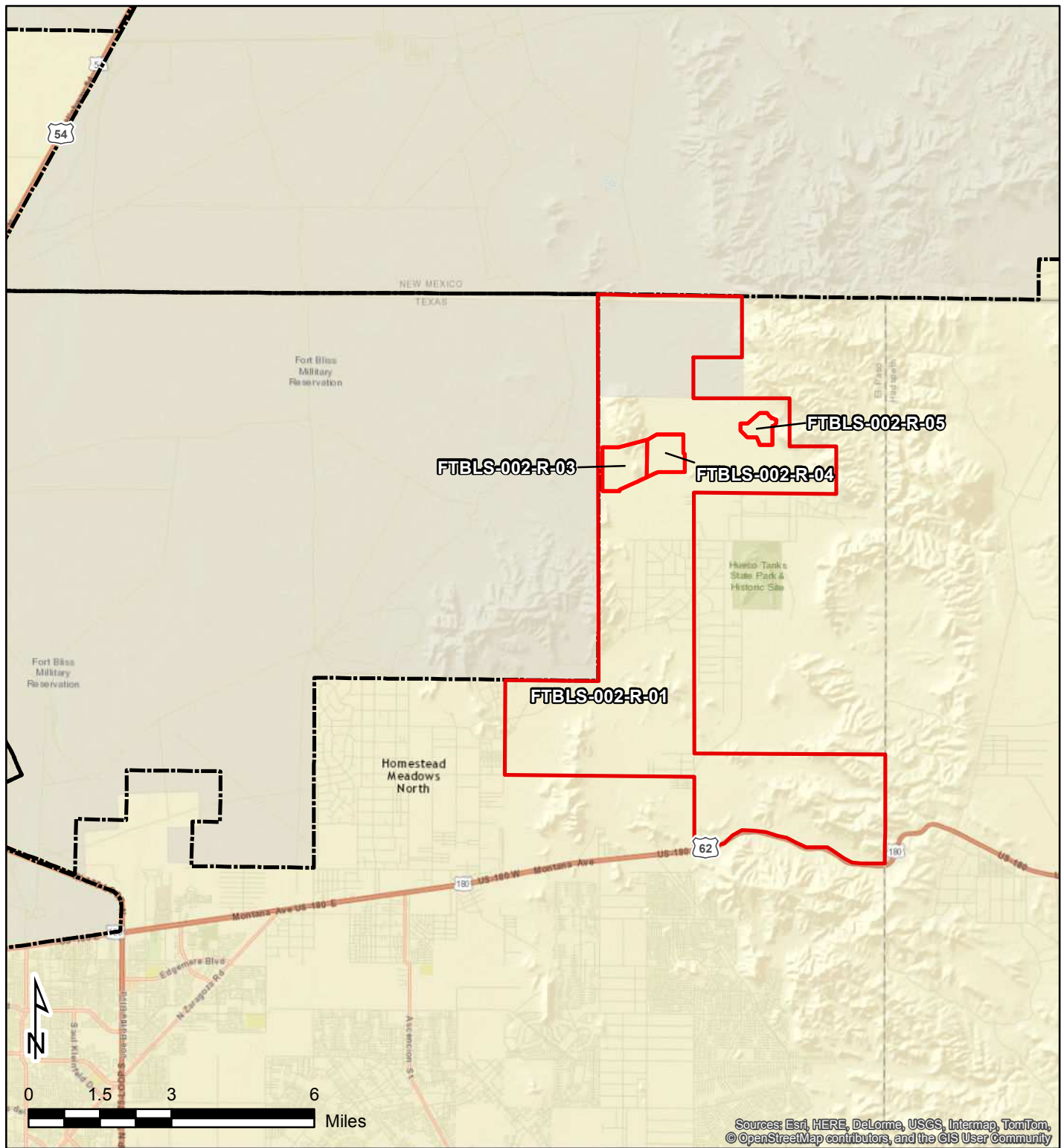
FORMER MANEUVER AREA A (FTBLS-002-R-05)
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TABLE 1 SUMMARY OF DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES					
EVALUATION CRITERIA	Alternative 1 - No Action	Alternative 2 - Public Awareness Program	Alternative 3 - Land Use Controls	Alternative 4 - MEC Surface Clearance	Alternative 5 - MEC Surface Clearance and MEC Subsurface Removal
OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT					
Human Health Protection	This alternative provides no protection to human health and does not provide any reduction in explosive hazards. MEC, if any, would not be eliminated, reduced, or controlled through treatment, engineering, and/or LUCs.	This alternative provides a low level of protection to human health and does not provide any reduction in explosive hazards. MEC, if any, would not be eliminated, reduced, or controlled through treatment, engineering, or LUCs. Alternative 2 provides a public awareness program to promote communication between the public and Fort Bliss, and to inform receptors of the potential MEC risks associated with the MRS.	This alternative provides a low level of protection to human health and does not provide any reduction in explosive hazards. Potential MEC would not be eliminated or reduced. Potential MEC interactions would be limited through LUCs.	This alternative provides a medium level of protection to human health and a medium level reduction in explosive hazards on the surface of the MRS by eliminating or reducing the amount of surface MEC. Potential subsurface MEC interactions would be limited through LUCs.	This alternative provides a high level of protection to human health and a high level of reduction in explosive hazards on the surface and subsurface of the MRS by eliminating or reducing the amount of surface and subsurface MEC.
Environmental Protection	MEC is not expected to have a significant negative impact on the ecosystem.	MEC is not expected to have a significant negative impact on the ecosystem.	MEC is not expected to have a significant negative impact on the ecosystem.	MEC is not expected to have a significant negative impact on the ecosystem.	MEC is not expected to have a significant negative impact on the ecosystem.
COMPLIANCE WITH ARARs					
Compliance with ARARs	No applicable ARARs	No applicable ARARs	No applicable chemical-specific or action-specific ARARs. Planning would be required to comply with location-specific ARARs.	Planning would be required to comply with chemical-specific, location-specific, and action-specific ARARs.	Planning would be required to comply with chemical-specific, location-specific, and action-specific ARARs.
LONG-TERM EFFECTIVENESS					
Magnitude of Residual Risk	Risks to potential future receptors would remain indefinitely.	Risks to potential future receptors would remain indefinitely.	Risks to potential future receptors would remain indefinitely.	Risks to potential future receptors would remain for intrusive activities and for any potentially unidentified MEC.	Risks to potential receptors would remain for any potentially unidentified MEC.
Adequacy and Reliability of Controls	Not applicable	The overall effectiveness of this alternative would depend on the support, involvement, and willingness of local agencies and landowners.	Engineering controls should offer some level of protection by restricting access to the MRS and providing adequate warning to potential receptors. However, an on-site land manager would not be present to ensure that engineering controls are effective.	The MEC surface clearances would effectively reduce the probability of encountering MEC at the surface of the MRS. However, this alternative does not address the risk associated with subsurface MEC, where a large percentage of MEC is anticipated to be found. Over time, subsurface MEC may be exposed at the surface through erosion. Risks to receptors completing intrusive activities within the MRS would remain. Since subsurface MEC would not be removed, LUCs would still be required.	The MEC surface clearances and MEC subsurface removals would effectively reduce the probability of encountering MEC at the surface and within the subsurface of the MRS.
REDUCTION OF TOXICITY, MOBILITY, AND VOLUME					
Treatment Process Used	None	None	None	Disposal of MEC by detonation.	Disposal of MEC by detonation.
Reduction of TMV	None	None	None	Total volume of MEC would be reduced by the amount removed from the surface.	Total volume of MEC would be reduced by the amount removed from the surface and subsurface.
SHORT-TERM EFFECTIVENESS					
Time Required to Achieve Remedial Action Objectives	Indefinite	Indefinite	RAO would be met upon implementation of LUCs.	RAO would be met upon implementation of LUCs and completion of the remedial action. The time required for the MEC surface clearance would be dependent on available resources.	RAO would be met upon completion of the remedial action. The time required for the MEC surface clearances and MEC subsurface removals would be dependent on available resources.

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TABLE 1 SUMMARY OF DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES					
EVALUATION CRITERIA	Alternative 1 - No Action	Alternative 2 - Public Awareness Program	Alternative 3 - Land Use Controls	Alternative 4 - MEC Surface Clearance	Alternative 5 - MEC Surface Clearance and MEC Subsurface Removal
Protection of Community During Remedial Action	No action taken.	No action taken.	Potential short-term impacts may include increased traffic flow on public roads used by the trucks to transport fence and sign materials; however, these potential impacts are expected to be minimal and would not require extensive planning.	Potential short-term impacts may include increased traffic flow on public roads used by the trucks to transport fence and sign materials; however, these potential impacts are expected to be minimal and would not require extensive planning. MEC field activities could potentially involve additive short-term impacts to the community during MEC disposal operations. Appropriately trained personnel, safety procedures, protective equipment, and approved planning documents (e.g., ESS) would be used to reduce impacts to the workers, environment, and community.	MEC field activities could potentially involve additive short-term impacts to the community during MEC disposal operations. Appropriately trained personnel, safety procedures, protective equipment, and approved planning documents (e.g., ESS) would be used to reduce impacts to the workers, environment, and community.
Protection of Workers During Remedial Action	No action taken.	No action taken.	Placement of fencing and/or warning signs along the perimeter of the MRS poses a risk for construction workers to come in contact with potential MEC. These short-term risks to workers would be limited through the implementation of an approved health and safety plan and use of UXO safety support during construction field activities.	For LUCs, see Alternative 3. The MEC surface clearance poses a moderate to high risk to site workers during MEC-related activities. Appropriately trained personnel, safety procedures, protective equipment, and approved planning documents would be used to reduce impacts to the workers, environment, and community.	The MEC fieldwork poses a moderate to high risk to site workers during MEC-related activities. Appropriately trained personnel, safety procedures, protective equipment, and approved planning documents would be used to reduce impacts to the workers, environment, and community.
IMPLEMENTABILITY					
Technical Feasibility	Not applicable	Alternative uses well-established processes that are technically feasible.	Alternative uses well-established processes that are technically feasible.	Alternative uses well-established processes that are technically feasible.	Alternative uses well-established processes that are technically feasible.
Administrative Feasibility	Not applicable	Alternative is considered administratively feasible. This alternative has no construction activities to implement and ROE agreements would not be required. Administratively, a process substantially similar to this alternative was implemented at Fort Bliss (i.e., Community Relations Plan) during the RI.	Administratively, implementation of Alternative 3 could be difficult. None of the land associated with the MRS is currently owned or used by Fort Bliss.	Administratively, implementation of Alternative 4 could be difficult. The MRS encompasses 203 acres. None of the land associated with the MRS is currently owned or used by Fort Bliss.	Administratively, implementation of Alternative 5 could be difficult. The MRS encompasses 203 acres. None of the land associated with the MRS is currently owned or used by Fort Bliss.
Availability of services and materials	Not applicable	Services and materials are readily available.	Services and materials are readily available.	Detection and disposal technologies are readily available and moderately easy to implement. Field activities would require extensive logistic support and planning due to land ownership.	Detection and disposal technologies are readily available and moderately easy to implement. Field activities would require extensive logistic support and planning due to land ownership.
COST					
Total Cost of Alternative	\$0	\$278,156	\$1,038,500	\$1,511,244	\$1,090,750
ARAR = Applicable or Relevant and Appropriate Requirements ESS = Explosives Safety Submission LUC = land use control MEC = munitions and explosives of concern MRS = munitions response site		RAO = Remedial Action Objective RI = Remedial Investigation ROE = right-of-entry TMV = Toxicity, Mobility, or Volume UXO = unexploded ordnance			

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Legend

- Installation Boundary
- MRS Boundary

URS

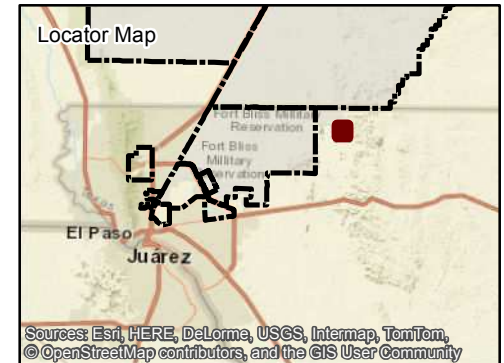
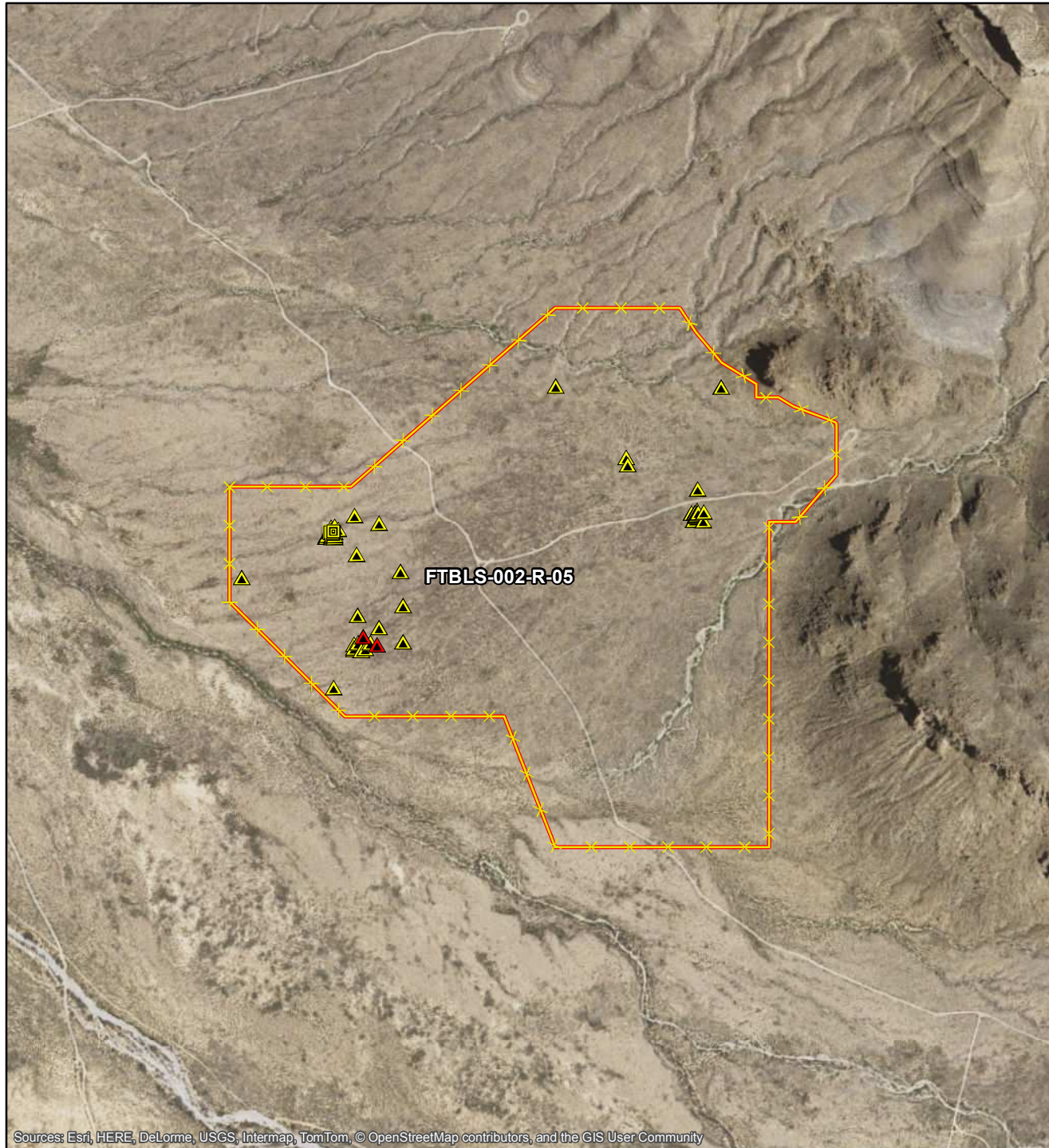


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MRS Location Map Fort Bliss El Paso, Texas

Drawn By: JZ	Date: 8/11/2015
Checked By: PW	Project No. 60417030

Figure 1



Legend

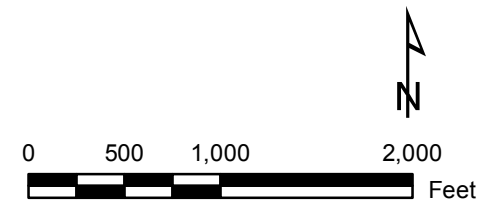
- Installation Boundary
- MRS Boundary
- Engineering Controls (i.e., fence and warning signs)

MEC

- 4.2-Inch Mortar

MD

- 4.2-Inch Mortar Fragment
- Fuze



URS

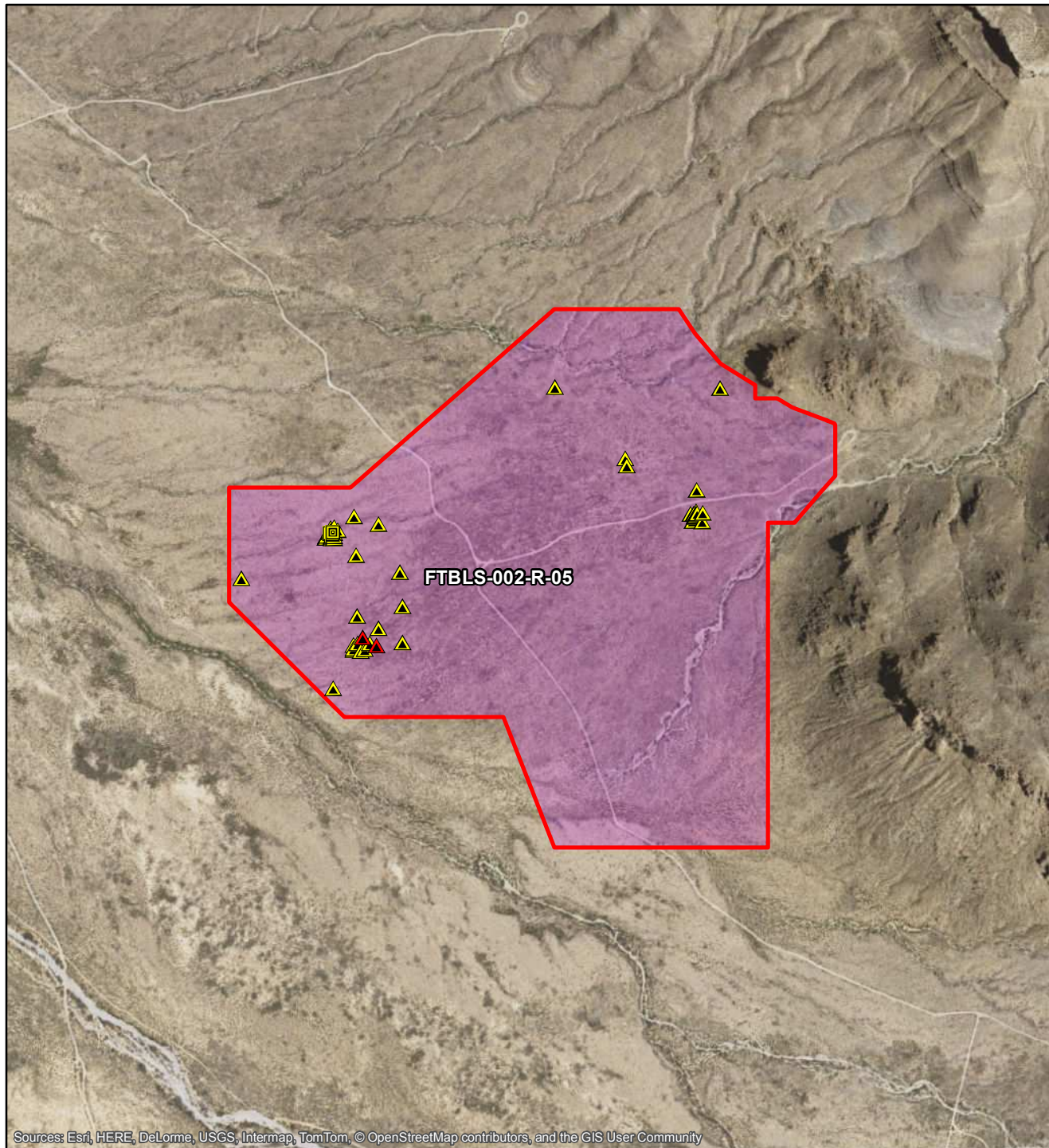


Alternative 3 - Land Use Controls Former Maneuver Area A Fort Bliss El Paso, Texas

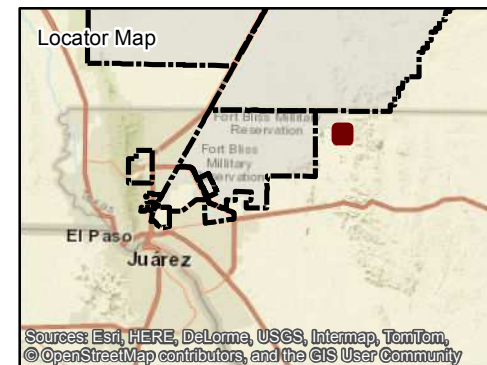
Drawn By: JZ	Date: 7/7/2016
Checked By: PW	Project No. 60417030

Figure 2

Sources: Esri, HERE, DeLorme, USGS, Intermap, TomTom, © OpenStreetMap contributors, and the GIS User Community



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Sources: Esri, HERE, DeLorme, USGS, Intermap, TomTom, © OpenStreetMap contributors, and the GIS User Community

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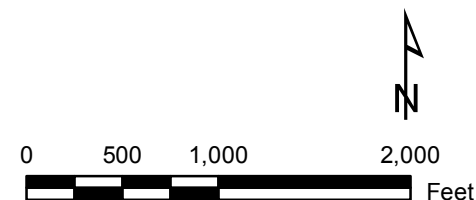
- Installation Boundary
- MRS Boundary
- Proposed MEC Surface Clearance

MEC

- 4.2-Inch Mortar

MD

- 4.2-Inch Mortar Fragment
- Fuze



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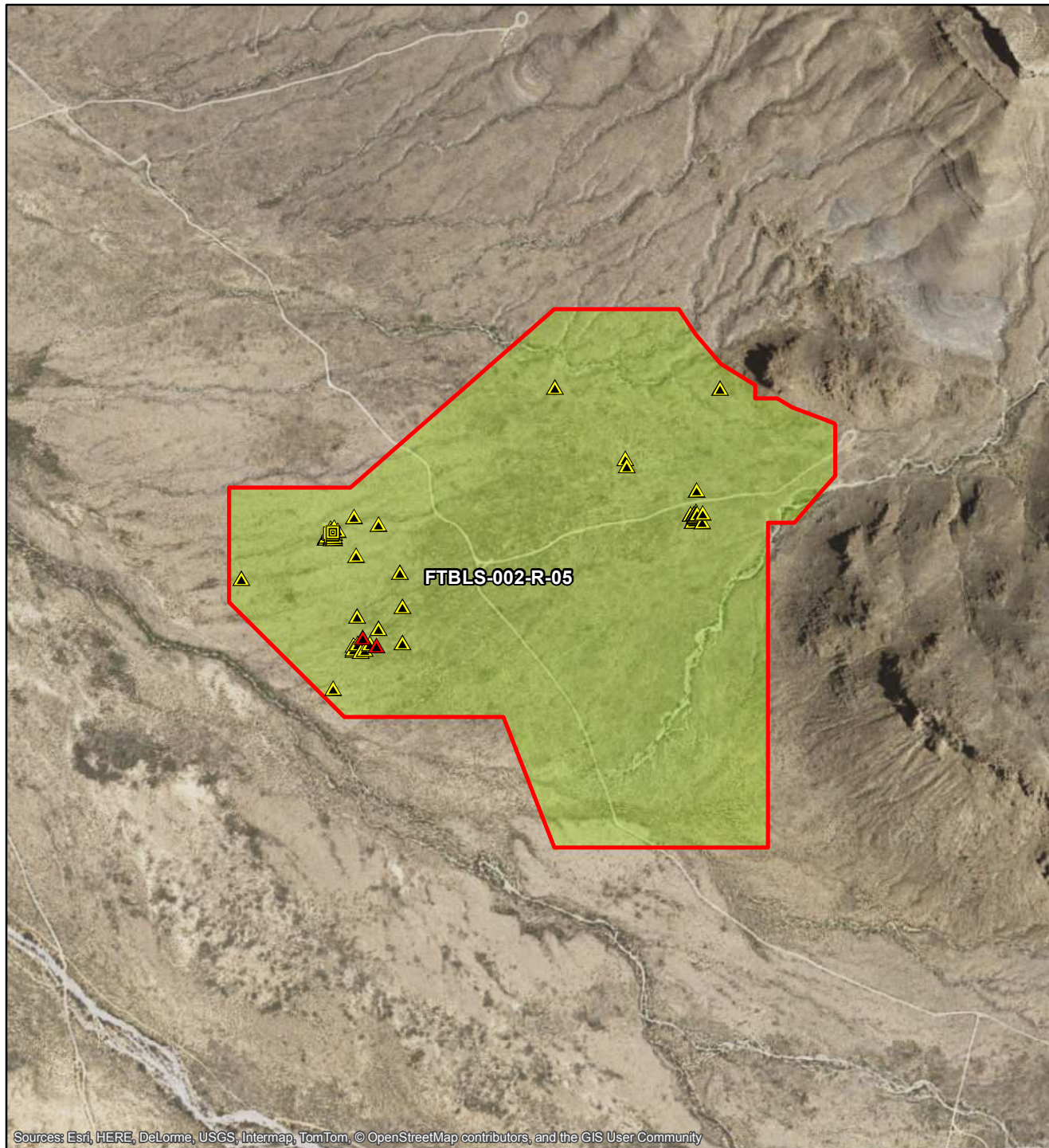


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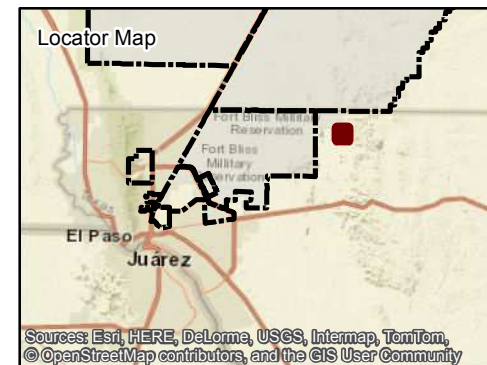
Alternative 4 - MEC Surface Clearance Former Maneuver Area A Fort Bliss El Paso, Texas

Drawn By: JZ	Date: 7/7/2016
Checked By: PW	Project No. 60417030

Figure 3

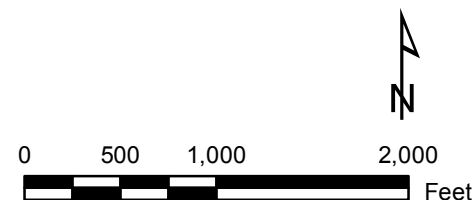


Sources: Esri, HERE, DeLorme, USGS, Intermap, TomTom, © OpenStreetMap contributors, and the GIS User Community



Legend

- Installation Boundary
- MRS Boundary
- Proposed MEC Surface Clearance and MEC Subsurface Removal
- MEC**
 - 4.2-Inch Mortar
- MD**
 - 4.2-Inch Mortar Fragment
 - Fuze



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Alternative 5 - MEC Surface Clearance and MEC Subsurface Removal Former Maneuver Area A Fort Bliss, El Paso, Texas

Drawn By: JZ	Date: 7/7/2016
Checked By: PW	Project No. 60417030

Figure 4